1   **CLAIMS**

2   We claim:

3   1. A method comprising:

4   processing a data packet, having a destination address (d), towards a routing
5   destination; and

6   determining a default-route-prefix (P_d) in a default-route determination step, when in
7   a routing table cache (L_1) and in a routing table (L_2), there is no entry with a
8   destination address prefix that is a prefix of the destination address (d).

9   2. A method as recited in claim 1, wherein the default-route-prefix (P_d) is determined
10   be a prefix of at least the destination address (d).

11   3. A method as recited in claim 1, wherein in a first lookup step for the destination
12   address (d) the destination address prefix being a prefix thereof is searched in the
13   routing table cache (L_1), and wherein if said first lookup step results in not finding
14   such destination address prefix, in a second lookup step for said destination
15   address (d) the destination address prefix being a prefix thereof is searched in the
16   routing table (L_2).

17   4. A method as recited in claim 3, wherein if the second lookup step on the routing
18   table (L_2) results in finding the destination address prefix being a prefix of the
19   destination address (d) a matching destination address prefix, the found destination
20   address prefix entry is entered into the routing table cache (L_1) in a cache update
21   step, and the data packet is forwarded in a destination forwarding step to the
22   corresponding routing destination.

1   5. A method as recited in claim 3, wherein if the second lookup step results in not

2   finding the destination address prefix being a prefix of the destination address (d),

3   in a default forwarding step the data packet is forwarded to a default routing

4   destination.

5   6. A method as recited in claim 1, wherein in a default-route caching step, the

6   default-route-prefix (P_d) is entered together with the default routing destination as

7   an entry into the routing table cache (L_1).

8   7. A method as recited in claim 3, wherein in the first lookup step the routing table

9   cache (L_1) is searched for covering path entries that reside in the routing table

10   cache (L_1), the covering path entries in their totality being a prefix for at least all

11   destination address prefixes existing in the routing table (L_2).

12 8. A method as recited in claim 7, wherein in the event that the first lookup step

13   results in finding no covering path entry for the destination address (d), the data

14   packet is forwarded to a default routing destination in a default forwarding step.

15 9. A method as recited in claim 7, wherein in the event that the first lookup step

16   results in finding a covering path entry for the destination address (d), in a second

17   lookup step for said destination address (d) the destination address prefix being a

18   prefix of the destination address (d) is searched in the routing table (L_2).

19 10. A method as recited in claim 3, wherein in the event that the first lookup step

20   results in finding the destination address prefix being a prefix of the destination

21   address (d), the data packet is forwarded in a destination forwarding step to the

22   corresponding routing destination.

23 11. A method comprising:

1   processing a data packet, having a destination address (d), towards a routing

2   destination, wherein a default-route-prefix (P_d) resides together with a default

3   routing destination as an entry in a routing table cache (L_1); and

4   forwarding the data packet to said default routing destination, when the

5   default-route-prefix (P_d) matches at least part of said destination address (d).

6   12. An article of manufacture comprising a computer usable medium having

7   computer readable program code means embodied therein for causing processing

8   of a data packet, the computer readable program code means in said article of

9   manufacture comprising computer readable program code means for causing a

10   computer to effect the steps of claim 1.

11   13. An article of manufacture comprising a computer usable medium having

12   computer readable program code means embodied therein for causing processing

13   of a data packet, the computer readable program code means in said article of

14   manufacture comprising computer readable program code means for causing a

15   computer to effect the steps of claim 11.

16   14. A program storage device readable by machine, tangibly embodying a program of

17   instructions executable by the machine to perform method steps for processing of

18   a data packet, said method steps comprising the steps of claim 1.

19   15. A program storage device readable by machine, tangibly embodying a program of

20   instructions executable by the machine to perform method steps for processing of

21   a data packet, said method steps comprising the steps of claim 11.

22   16. An apparatus comprising:

1   means for processing a data packet, having a destination address (d), towards a

2   routing destination; and

3   means for determining a default-route-prefix (P_d) in a default-route determination

4   step, when in a routing table cache (L_1) and in a routing table (L_2), there is no entry

5   with a destination address prefix that is a prefix of the destination address (d).

6   17. A computer program product comprising a computer usable medium having

7   computer readable program code means embodied therein for causing a

8   processing of a data packet, the computer readable program code means in said

9   computer program product comprising computer readable program code means for

10   causing a computer to effect the functions of claim 16.